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AUTHOR Shaughnessy, Michael F.
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ABSTRACT

Although reading has been studied extensively over the past few decades, its measurement and amelioration continues to be problematic. This paper explores the reasons for this within a psycho-educational perspective and offers several new alternative theoretical positions from which to view prose processing and enhancement. Implications for reading teachers, diagnosticians, and psychologists are reviewed in the paper. (Contains 16 references.) (Author/RS)

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Reading : What Are We Missing ? What Can We Infer ?

Michael F. Shaughnessy
Eastern New Mexico University
Portales, New Mexico 88130

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Abstract

Although reading has been studied extensively over the past few decades, it's measurement and amelioration continues to be problematic. This article explores the reasons for this within a psycho-educational perspective and offers several new alternative theoretical positions from which to view prose processing and enhancement. Implications for reading teachers, diagnosticians, and psychologists are reviewed .

Reading problems continue to be the " common cold " of the realm of education. Despite much research, problems in reading continue to plague teachers, specialists and investigators alike. This article will attempt to identify some of the problems underlying reading in terms of theory. Secondly, newer, more perspecacious theories will be reviewed. Finally, implications from recent developments in the measurement of reading (and intelligence) will be examined and their implications explored. Hopefully, some clarifications regarding reading and prose processing will be forthcoming.

Reading has been seen in the past as the process whereby a student opens a book, looks at some letters, and words and lines and then a miracle occurs and a student has "learned" something or comprehended some material or remembered the essence of what he or she has read. Obviously, we need to be more specific somewhere along the line and have some theoretical explanation for what occurs during the " multiplication of the loaves and fishes ".

Recently, Royer and Cunningham (1981) have put forth a " minimal principle of reading comprehension ". Their principle indicates that

" the act of comprehension entails an interaction between an incoming linguistic message and the comprehender's world knowledge " .

Drawing upon the work of Clark and Clark (1977), Royer and Cunningham indicate the need to differentiate between a readers word knowledge and world knowledge (or between a reader's dictionary knowledge and their encyclopedic knowledge, if you will. Thus, while reading, a pupil consults his or her dictionary for his/her understanding of the word " perspicacious " earlier used by this writer, and for some understanding of the term " multiplication of the loaves and fishes " again, used earlier in this article.

Obviously, two things can go wrong during the reading process. First, the word " perspicacious " may confound, confuse, and cognitively disrupt the reading process. Secondly, the " loaves and fishes " bit may further disorient the reader if he/she lacks the general knowledge or cultural literacy or encyclopedic prowess relative to this very famous religious phrase. Thirdly, there may be no interaction between pupil and prose, in which case, the student reads words, comprehends the " loaves and fishes " metaphor, yet fails to integrate it all to form a meaningful gestalt or whole.

Thus, he/she does nt get the " gist " or achieve any insight into what the writer is trying to say. Fourthly, the student may lack the attentional or concentration skills to focus on what they are reading and thus fail to obtain much of the information.

So far, so poor. And how problematic is the word or world deficiency ? Recently collected data by this author (Shaughnessy, 1985) has revealed that the general world knowledge of secondary student teachers about to impart knowledge is no better than the twelfth grade level. Thus, four years of college have given student teachers the general information of an average twelfth grade student. Unfortunately, elementary student teachers ffared even worse on the general information component of the Peabody Individual Achievement Test.

Word knowledge based on group testing using the Peabody Picture Vocabulary Test-Revised is further cause for concern.

However, to return to our illustrious imaginary reader. his or her reading endeavors will also be facilitated by not only a exemplary fund of general information, but also by prior related knowledge.

A major theorist who has investigated this realm is Walter Kintsch. Basically, Kintsch indicates that new information in text will be understood or comprehended more readily if it was preceded by related information. This has been shown not only in his work (Kintsch, 1974, Kintsch & Van dyk, 1978 and Kintsch and Vipond, 1977) but in a more general way by Ausubel and his colleagues (Ausubel and Youssef, 1963, Ausubel and Fitzgerald, 1961, Ausubel and Fitzgerald, 1962) . Furthermore, Jerome Bruner has suggested a " spiral curriculum " to facilitate learning. In this view, students learn better if they have a solid foundation upon which to build. If their prior curriculum has been weak, they will have difficulty integrating and synthesizing information.

What happens to readers who lack general or prior knowledge ? Kintsch and Vipond (1977) indicate that

" Another way in which knowledge would be beneficial-- in fact crucial-- in comprehension is in the inference processes that are required whenever an incoherent text base is constructed. We have suggested that these inferences constitute a major source of reading difficulty. For high knowledge readers, this difficulty should be greatly reduced, whereas for readers without the neccessary knowledge it would be insurmoutable and lead to the formation of disjointed, impossible to retrieve text bases." (p. 232)

Thus, so far, it can be seen that poor readers may have primary difficulties (poor basic skills such as the decoding of ostentatious words and word identification or the inability to combine single words into a complete, coherent passage, thus failing to comprehend the text). Secondary difficulties may stem from the student's paucity of world knowledge (Where is Versailles, Ethiopia, Who is Paul Revere) or poor prior knowledge in a specific area or field. It is conceivable that there could be a poorly written introduction by the author or writer, or there could also be poor inferencing skills on the part of the reader.)

Unfortunately, most reading teachers and reading tests do not address many of the aforementioned issues. Most, if not all diagnostic reading tests do not include a " general information component ". Inferencing skills and abilities are often overlooked and the student's use of introductory paragraphs, heading and titles as adjunct aids are again overlooked.

The ability to draw and make inferences will, at this point, be examined as a critical aspect of the reading process. Inferencing can take one of several forms which leads to comprehension. According to Kintsch (1979) the more inferences that the pupil has to make, the more difficult the material becomes to read. Thus, a student with poor word knowledge plus poor world knowledge, plus poor inferencing skills is most apt to be a poor reader. However, an understanding of the inferencing process may facilitate remediation, theory construction and diagnostic procedures.

Inferences can of course, be made at the local level of a sentence or could be phrase, paragraph or text based. Inferences can also be made at the word level as to the meaning of the word.

Sternberg (1985) has indicated that there are several mechanisms operative in the assumptive process relative to words. Thus, students can learn from context or make inferences relative to context. The context cues are as follows :

1) Temporal cues (relative to the duration or frequency of the unknown word. For example, " At dawn, the blen arose "

2) Spatial cues (regarding the general or specific location of the unknown word. For example " The blen arose on the horizon ".

3) Value clues-- These clues lend information relative to the value, desirability, worth, or fiscal value of a term. For example, " The Merchants eagerly sought the drachma of the tourists " .

4) Stative descriptive cues give information relative to the properties of a certain thing- that is, size, color, odor, shape. For example, " The blen arose shining brightly.

5) Functional descriptive cues tell about possible purpose a word, actions intended, possible uses. For example, " The blen arose and shone brightly.

6) Causal/enablementcues are relative to possible causes or facilitative conditions or one cue may describe " A " as a probable cause or helping condition for " B " .

7) Class membership cues indicate a class to which a word belongs. Perspicacious belongs to a class of words termed adjectives which describe wise, smart, insightful, etc.

8) Equivalence information yield cues relative to the meaning of a word or opposite information. Antonyms and diametricals are included in this category.

Incidentally, the neologism, "blen" is a synonym for "sun ". In addition to the above, there are a number of mediating variables functional in this comprehension process. These are, according to Sternberg (1985, pp 222-225).

1) The number of occurances of the unknown word.

2) Variability of contexts in which multiple occurances of the unknown word appear.

3) Importance of the unknown word to the context in which it is embedded.

4) Helpfulness of surrounding context in understanding the meaning of the unknown word.

5) Density of unknown words.

6) Concreteness of the unknown word and the surrounding context. eg. the use of the word " pulchritude " can be inferred in a paragraph about fashion models more readily than in a text about esoteric qualities

7) Usefulness of previously known information in cue utilization .

Thus, as can be seen, the ability to make inferences about words and the ability to ascertain the semantic base of words is a complex procedural matter. The aforementioned cues are all relative ot the external aspects of word acquisition.

Sternberg (1985) has further posited a theory of decoding relative to internal context. The cues are :

a) prefix cues eg. pre meaning " before ".
b) Stem cues
c) Suffix cues
d) Interactive cues eg. thermoluminescence can be broken down into smaller parts. The prefix " thermo " refers to hear, the root luminescence refers to giving off light and the " ence " suffix is generally used to form abstract nouns.
Furthermore, there are a number of mediating variables to asssit in the acquisition of vocabulary words.

1) The number of occurances of the unknown words
2) The importance of the unknown word to understanding the context in which it is embedded.
3) The density of the unknown words.
4) The density of decomposable unknown words.
5) The usefulness of previously known information in cue utilization.

Another domain that is frequently neglected in reading research and theory is that of memory. Although people may read and acquire information, levels of retention of information seems to differ. Thus, after reading, some readers simply remember what they have read better. This may be due to two reasons :

1) Some readers have a larger capacity and simply remember more.
2) The " state of the learner's current knowledge structure contributes to learning rates " (Royer, Hombleton and Cadorette, 1987, p. 187). This enhanced knowledge structure may make to-be-learned information more meaningful and hence better integrated into one's" ideational scaffolding " as referred to by David Ausubel.

In terms of those who are poor readers, it seems plausible to indicate that " sufficient effort was not concentrated upon the acquisition of basic information which would be relevant to the acquisitiobn of subsequent instructional material. " (Royer, Hambleton and Caderette, 1978 , p.200)

The type of " comprehension test " further reflects on memory retention, capacity and retrieval in readers. Some tests are recognition based i.e. multiple choice, true-false, matching, whereas other tests depend on recall eg. essay and evaluative/critical paragraphs.

Two theoretical positions seem to indicate that if a student is aware of the form by which he/she will be tested, recall may be enhanced.

Morris, Bransford and Franks (1977) have referred to this as "transfer appropriate processing" .

Craik and Byrd (1983) have indicated that, particularly for older adult students, that test questions which restate the original learning context tend to aid retention and recall. In effect, memory may work best when :

1) materials are familiar to the reader's general knowledge base.
2) The meaning of words can be found in the reader's word knowledge or can be easily decoded.
3) There are opportunities to " structure " one's reading in preparation for the specific test format.

One final realm relative to reading that has been often neglected is that of the reader's inferential capacity.

At the sentence or phrase level, inferences are most often made during reading. However, there are many variables operative in this process. Frase (1970) has shown that inferences are more easily derived if the text is logically oriented or constructed in sequential fashion. Also, according to Hayes-Roth and Thorndyke (1979) if related information is worded in a similiar fashion, learners are able to infer better than when information is paraphrased.

The ability to make inferences when necessary enhances readers ability to facilitate the integration of material from texts. The integration of material from texts further enhances general overall comprehension. Walker and Mayer (1980) have extensively reviewed the factors and the relevant empirical evidence. However, a few of these factors will be summarily discussed.

First, while acknowledging the discrepancies among contemporary psychological reading theorists

" the integration of related and contiguous propositions occurs spontaneously during the process of acquiring information and (2) integrated memory structres formed

during acquisition aid in comprehension and facilitate higher order cognitive processing (Walker & Meyer, p.433).

Thus, during reading, a great many processes occur simultaneously and automatically during reading . First, word recognition, second, integration into one's world knowledge base, and finally the inferencing process also appears to assist in recall and evaluative and synthesis processes.

This cursory review has been an attempt to 1) sensitize readers to some missing or unexamined variable in reading and 2) to expose the reader to some newer conceptualizations which, if explored if depth, will enhance one's future integration of theoretical material in the domain of reading. To respond to the title of the paper, we seem to be missing a theory of word learning and world knowledge acquisition. Further, we are attempting to enhance comprehension without ameliorating inferential abilities. If we can address these issues, the reading skills of many may be improved.

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